QP
501
J67

THE JOURNAL OF BIOCHEMISTRY

EDITED FOR

THE JAPANESE BIOCHEMICAL SOCIETY

VOLUME 80, 1976

EDITORIAL BOARD

Editor-in-Chief: Haruhisa YOSHIKAWA

Editors

Tokuji IKENAKA, Masamiti TATIBANA, Makoto NAKAO, Nobuo UI, Shoshichi NOJIMA, Tamio YAMAKAWA, Yasuyuki TAKAGI, Toshio YAMANO

Managing Editors

Yasutomi NISHIZUKA, Ikuo YAMASHINA

Regular Reviewers

Etsushiro DOI, Ichiro HARUNA, Keitaro HIROMI, Keitaro KATO, Akira KOBATA, Den'ichi MIZUNO, Masami MURAMATSU, Kozo NARITA, Mitsuhiro NOZAKI, Sakaru SUZUKI, Bun-ichi TAMAOKI, Michio UI, Setsuro EBASHI, Takashi HASHIMOTO, Koichi IWAI, Takashi KAWASAKI, Koscak MARUYAMA, Shoji MIZUSHIMA, Hachiro NAKAGAWA, Yasutomi NISHIZUKA, Mutsuo SEKIGUCHI, Toshio TAKAGI, Masanobu TOKUSHIGE, Satoshi YAMASHITA, Saburo FUKUI, Katsuya HAYASHI, Yasuo KAGAWA, Masayasu KITAGAWA, Kin'ichiro MIURA, Takashi MURACHI, Takao NAKAMURA, Haruhiko NODA, Kensuke SHIMURA, Tamotsu TAKETOMI, Kenkichi TOMITA

PUBLISHED MONTHLY

BY

THE JAPANESE BIOCHEMICAL SOCIETY

COPYLIGHT, 1976 ©

BY

THE JOURNAL OF BIOCHEMISTRY

PUBLISHED

BY

THE JAPANESE BIOCHEMICAL SOCIETY

CONTENTS OF VOLUME 80

No. 1, July, 1976

PAGE

Partial Purification and Characterization of an Endo-α-N-acetylgalactosaminidase from the Culture Medium of *Diplococcus pneumoniae*. *Y. Endo and A. Kobata* 1

Purification and Characterization of β-N-Acetylhexosaminidases and β-Galactosidase from *Streptococcus* 6646 K. *T. Kiyohara, T. Terao, K. Shioiri-Nakano, and T. Osawa* 9

Purification and Properties of an Alkaline Ribonuclease from the Hepatic Cytosol Fraction of Bullfrog, *Rana catesbeiana*. *H. Nagano, H. Kiuchi, Y. Abe, and R. Shukuya* 19

Synthesis of Various Phosphodiesters and Phosphomonoesters with Ribonuclease N_1. *F. Tamanoi, T. Uchida, F. Egami, and T. Oshima* 27

Enzymatic Synthesis of Oligonucleotides of Defined Sequence. The "Single Addition" of 2′(3′)-O-Dihydrocinnamoyl-nucleoside 5′-Diphosphate to a Primer Oligonucleotide Catalyzed by a Thermophilic Polynucleotide Phosphorylase. *Y. Kikuchi, K. Hirai, K. Someno, and K. Sakaguchi* 33

Further Studies on the Specificity of the Minor Ribonuclease from *Aspergillus saitoi*. *M. Irie and K. Ohgi* 39

Incorporation of Serine and Ethanolamine into the Phospholipids in Rabbit Retina. *A. Mizuno* 45

Identification of Glucosyl Sphingosine from Gaucher's Spleen by Gas Chromatography-Electron Impact and GC-Chemical Ionization Mass Spectrometry. *M. Oshima* 53

The Structure and Function of Acid Proteases. IV. Inactivation of the Acid Protease from *Mucor pusillus* by Acid Protease-specific Inhibitors. *K. Takahashi, W.-J. Chang, and K. Arima* 61

Additional Evidence for Hydrophobic Bond Formation in the Adsorption of Sulfanilamide on Bio-Gel Beads. *M. Janado, K. Shimada, N. Horie, and T. Nishida* 69

Distribution of the Low Molecular Weight Form of Eukaryotic Elongation Factor 1 in Various Tissues. *S. Nagata, K. Iwasaki, and Y. Kaziro* 73

Purification and Properties of an Enzyme Catalyzing the Splitting of Carbon-Mercury Linkages from Mercury-Resistant *Pseudomonas* K-62 Strain. I. Splitting Enzyme 1. *T. Tezuka and K. Tonomura* 79

Interaction of Tropomyosin with Troponin Components. *R. Dabrowska, Z. Podlubnaya, E. Nowak, and W. Drabikowski* 89

Thiols of Myosin. IV. "Abnormal" Reactivity of S_1 Thiol and the Conformational Changes around S_2 Thiol. *K. Takamori, K.A. Kato, and T. Sekine* 101

Ca^{2+}-induced Conformational Changes of Spin-labeled g_2 Chain Bound to Myosin and the Effect of Phosphorylation. *Y. Okamoto and K. Yagi* 111

Myosin-free Ghosts of Single Fibers and an Attempt to Re-form Myosin Filaments in the Ghost Fibers. *K. Tawada, A. Yoshida, and K. Morita* 121

Stabilization of Human Serum Alkaline Phosphatase to Histidine-induced Heat Inactivation by Tryptic Digestion. *T. Yamashita, E. Sawanobori-Isobe, and M. Mori* 129

Oxidation-Reduction Behavior of the Heme *c* and Heme *d* Moieties of *Pseudomonas aeruginosa* Nitrite Reductase and the Formation of an Oxygenated Intermediate at Heme *d*. *H. Shimada and Y. Orii* 135

Proton Translocating ATPase of a Thermophilic Bacterium. Morphology, Subunits, and Chemical Composition. *Y. Kagawa, N. Sone, M. Yoshida, H. Hirata, and H. Okamoto* 141

PAGE

In Vitro Polymerization of Flagellar and Ciliary Outer Fiber Tubulin into Microtubules.
R. Kuriyama 153

Characterization of the NAD^+ Glycohydrolase Associated with the Rat Liver Nuclear Envelope.
M. Fukushima, H. Okayama, Y. Takahashi, and O. Hayaishi 167

Oxidative Phosphorylation in Brown Adipose Tissue Mitochondria from Rats Kept under Normal Environmental Conditions. *T. Sugano, M. Shimada, and H. Tatsumi* 177

Calcium Sensitivity of Abalone, *Haliotis discus*, Myosin. *N. Azuma* 187

PRELIMINARY COMMUNICATION

Enzyme Immunoassay of Testosterone Using the Testosterone-Glucoamylase Complex.
K. Tateishi, H. Yamamoto, T. Ogiwara, C. Hayashi, and M. Kitagawa 191

No. 2, August, 1976

Characterization of One Neutral and Two Acidic Glycoasparagines Isolated from the Urine of Patients with Aspartylglycosylaminuria (AGU).
K. Sugahara, S. Funakoshi, I. Funakoshi, P. Aula, and I. Yamashina 195

Distribution of Chondroitin Sulfate in Cartilage Proteoglycans under Associative Conditions.
K. Murata and A.O. Bjelle 203

Partial Purification and Properties of Porcine Thymus Lactosylceramide β-Galactosidase.
K. Nishimura and R. Amano 209

Dietary Control of Triglyceride and Phospholipid Synthesis in Rat Liver Slices.
N. Iritani, S. Yamashita, and S. Numa 217

Quantitative Determination of Cholestanol in Plasma with Mass Fragmentography. Biochemical Diagnosis of Cerebrotendinous Xanthomatosis. *Y. Seyama, K. Ichikawa, and T. Yamakawa* 223

The Chemical Modification of Beef Liver Catalase. V. Ethoxyformylation of Histidine and Tyrosine Residues of Catalase with Diethylpyrocarbonate. *K. Abe and F.K. Anan* 229

Kinetic Study of α-Chymotrypsin Catalysis with Regard to the Interaction between the Specificity-determining Site and the Aromatic Side Chain of Substrates.
M. Ohno, S. Sato, Y. Karasaki, and S. Tsukamoto 239

Propidium Diiodide-Cesium Chloride Density Gradient Centrifugation for Buoyant Separations of Duplex DNA Molecules Containing Single-Stranded Regions. *A. Fukuda* 253

Biosynthesis of Rat Kidney Catalase. Double-labeling by [^{14}C]Leucine and δ-Amino[^{3}H]levulinic Acid. *T. Higashi, F. Kawamata, and M. Dogen* 259

The Use of 8-Aminooctyl Sepharose for the Separation of Some Components of the Hepatic Microsomal Electron Transfer System. *Y. Imai* 267

Conformational Changes and Reassociation Properties of Small Subunits of *Escherichia coli* Ribosomes. *T. Imamura, M. Yokoyama, K. Konishi, K. Shimizu, and Y. Miyazawa* 277

Properties of Non-polymerizable Tropomyosin Obtained by Carboxypeptidase A Digestion.
H. Ueno, Y. Tawada, and T. Ooi 283

Involvement of Cyclic GMP in the Initial Stage of Hepatocytes Proliferation.
Y. Miura, H. Iwai, R. Sakata, H. Ohtsuka, Ezra E., K. Kubota, and N. Fukui 291

Regulation of AMP Deaminase from Chicken Erythrocytes. A Kinetic Study of the Allosteric Interactions. *M. Yoshino, Y. Kawamura, and N. Ogasawara* 299

Regulation of Chicken Erythrocyte AMP Deaminase by Phytic Acid.
M. Yoshino, Y. Kawamura, K. Fujisawa, and N. Ogasawara 309

PAGE

γ-Actinin, a New Regulatory Protein from Rabbit Skeletal Muscle. I. Purification and Characterization. *M. Kuroda and K. Maruyama* 315

γ-Actinin, a New Regulatory Protein from Rabbit Skeletal Muscle. II. Action on Actin. *M. Kuroda and K. Maruyama* 323

Biosynthesis of Norvaline, Norleucine, and Homoisoleucine in *Serratia marcescens*. *M. Kisumi, M. Sugiura, and I. Chibata* 333

Studies on Phospholipase A in *Trimeresurus flavoviridis* Venom. III. Purification and Some Properties of Phospholipase A Inhibitor in Habu Serum. *H. Kihara* 341

Studies on Triglyceride Lipases from Rat Adipose Tissue. *S. Matsumura, T. Matsuda, M. Matsuo, A. Kumon, K. Sudo, and Y. Nishizuka* 351

Studies on Phospholipase C from *Pseudomonas aureofaciens*. II. Further Studies on the Properties of the Enzyme. *S. Sonoki and H. Ikezawa* 361

Effective Method for Activity Assay of Lipase from *Chromobacterium viscosum*. *Y. Horiuti, H. Koga, and S. Gocho* 367

A New Bile Acid Conjugate, Ciliatocholic Acid, from Bovine Gall Bladder Bile. *M. Tamari, M. Ogawa, and M. Kametaka* 371

The Structure of a Glycopeptide (GP-II) Isolated from *Rhizopus* Saccharogenic Amylase. *K. Watanabe* 379

Purification and Properties of Oxytocinase (Cystine Aminopeptidase) from Monkey Placenta. *M. Hayashi and K. Oshima* 389

PRELIMINARY COMMUNICATIONS

Generation of the Superoxide Radical during Autoxidation of Oxymyoglobin. *T. Gotoh and K. Shikama* 397

Regulatory Protein of Bovine Tracheal Smooth Muscle. *N. Ito and K. Hotta* 401

Connectin, an Elastic Protein from Myofibrils. *K. Maruyama* 405

Enrichment of Enzyme Activity on Deformylation of 1-NFK-Lysozyme. *N. Yamasaki, T. Tsujita, F. Sakiyama, and K. Narita* 409

Isolation of Myosin from Starfish Sperm Heads. *I. Mabuchi* 413

No. 3, September, 1976

Interactions of 3-Deoxy and 6-Deoxy Derivatives of N-Acetyl-D-glucosamine with Hen Lysozyme. *S. Kuramitsu, Y. Yang, K. Ikeda, and K. Hamaguchi* 417

Interactions of α- and β-N-Acetyl-D-glucosamines with Hen and Turkey Lysozymes. *Y. Yang, S. Kuramitsu, Y. Nakae, K. Ikeda, and K. Hamaguchi* 425

Binding of Substrate Analogs to Hen Egg-white Lysozyme with an Ester Linkage between Glu 35 and Trp 108. *Y. Nakae, K. Ikeda, and K. Hamaguchi* 435

Near-UV Circular Dichroism of Trypsin Inhibitor of Adzuki Beans Attributable to Disulfide Groups. *C. Yoshida, M. Yoshikawa, and T. Takagi* 449

Interaction of Diiodo-L-tyrosine and Triiodophenol with Bovine Serum Albumin. Circular Dichroism and Fluorescence Studies. *N. Okabe, N. Manabe, R. Tokuoka, and K. Tomita* 455

Aminoacyl Transfer RNA Formation. VI. Binding of Cations to Transfer RNA and Its Role in Aminoacyl Transfer RNA Formation. *Y. Takeda, T. Ohnishi, and Y. Ogiso* 463

Aminoacyl Transfer RNA Formation. VII. Lack of Correlation between Aminoacylation and PP_i-ATP Exchange Catalyzed by Isoleucyl-tRNA Synthetase of *Escherichia coli* in the Presence of Various Divalent Cations. *Y. Takeda, T. Ohnishi, and Y. Ogiso* 471

PAGE

Renal Angiotensin I-Converting Enzyme as a Mixture of Sialo- and Asialo-enzyme, and a Rapid Purification Method. *G. Oshima, K. Nagasawa, and J. Kato* 477

Some Catalytic and Molecular Properties of Threonine Deaminase from *Bacillus stearothermophilus*. *N. Muramatsu and Y. Nosoh* 485

Temperature-jump Studies on the Interaction of Benzeneboronic Acid with Chymotrypsinogen. *K. Hanai* 491

The Structure and Function of Acid Proteases. V. Comparative Studies on the Specific Inhibition of Acid Proteases by Diazoacetyl-DL-norleucine Methyl Ester, 1,2-Epoxy-3-(*p*-nitrophenoxy)-propane and Pepstatin. *K. Takahashi and W.-J. Chang* 497

Purification of Human Plasma Kallikrein and Urokinase by Affinity Chromatography. *Y. Tamura and S. Fujii* 507

Dermatan Sulfate-Chondroitin Sulfate Copolymers from Umbilical Cord. Isolation and Characterization. *S. Inoue and M. Iwasaki* 513

In Vitro Stimulation by Retinol of Porcine Pancreatic Esterase Activity toward Esters of Short-chain Fatty Acids. *T. Komura, S. Wada, and H. Nagayama* 525

Isolation of Diacylglyceryl-2-Aminoethylphosphonate from Bovine Liver. *S. Hasegawa, M. Tamari, and M. Kametaka* 531

Further Studies on the Possible Compartmentation of the Precursor Pool of Cholesterol for the Biosynthesis of Cholic Acid in the Rat. *M. Ogura, Y. Ayaki, and M. Goto* 537

Determination of the Best-Fit Values of Kinetic Parameters of the Michaelis-Menten Equation by the Method of Least Squares with the Taylor Expansion. *M. Sakoda and K. Hiromi* 547

Induction of Ornithine Decarboxylase in Cultured Mouse L Cells. I. Effects of Cellular Growth, Hormones, and Actinomycin D. *Y. Yamasaki and A. Ichihara* 557

Circadian Rhythms of Digestive Enzymes in the Small Intestine of the Rat. II. Effects of Fasting and Refeeding. *M. Saito, E. Murakami, T. Nishida, Y. Fujisawa, and M. Suda* 563

Incorporation of Tritium into Cell Materials of *Rhodopseudomonas spheroides* from Tritiated Water in the Medium under Aerobic Conditions. *T. Inomata and M. Higuchi* 569

Isolation, Properties, and Crystallization of an Iron-Chlorin Protein from *Aspergillus niger*. *S. Horie, T. Watanabe, and S. Nakamura* 579

Freezing of Actin. Reversible Oxidation of a Sulfhydryl Group and Structural Change. *S. Ishiwata* 595

Cardiac Myosin from Pig Heart Ventricle. Purification and Enzymatic Properties. *U. Murakami, K. Uchida, and T. Hiratsuka* 611

Inability of the Smallest Light Chain to Bind to Fetal Fast Muscle Myosin. *M. Takahashi* 621

Synthesis of the Acid-soluble Proteins in Early Cleaving Embryos of the Sea Urchin. Cyclic Synthesis of Histones. *K. Kano and Y. Mano* 625

PRELIMINARY COMMUNICATIONS

3-Dehydroquinate Synthase in Germinating *Phaseolus mungo* Seedlings. *E. Yamamoto and T. Minamikawa* 633

New Types of Gangliosides in Starfish with Sialic Acid Residues in the Inner Part of Their Carbohydrate Chains. *M. Sugita and T. Hori* 637

The Amino Acid Sequences of Two Soybean Double Headed Proteinase Inhibitors and Evolutionary Consideration on the Legume Proteinase Inhibitors. *S. Odani and T. Ikenaka* 641

Quantitative Analysis of the Action of Taka-amylase A on Maltotriose. *T. Suganuma, M. Ohnishi, R. Matsuno, and K. Hiromi* 645

A Clottable Protein (Coagulogen) of Horseshoe Crab Hemocytes. Structural Change of Its Polypeptide Chain during Gel Formation. *S. Nakamura, T. Takagi, S. Iwanaga, M. Niwa, and K. Takahashi* 649

No. 4, October, 1976

PAGE

Comparative Study of Carbohydrate-Protein Complexes. II. Determination of Hydroxylysine and Its Glycosides in Human Skin and Scar Collagens by an Improved Method. *M. Isemura, K. Takahashi, and T. Ikenaka* 653

Studies on Cathepsins of Rat Liver Lysosomes. III. Hydrolysis of Peptides, and Inactivation of Angiotensin and Bradykinin by Cathepsin A. *K. Matsuda* 659

Studies on Urinary Kallikreins. I. Purification and Characterization of Human Urinary Kallikreins. *Y. Matsuda, K. Miyazaki, H. Moriya, Y. Fujimoto, Y. Hojima, and C. Moriwaki* 671

Calf Thymus Histone H2A. Purification and Tryptic Peptides. *H. Hayashi and K. Iwai* 681

Studies on Silk Fibroin of *Bombyx mori*. I. Fractionation of Fibroin Prepared from the Posterior Silk Gland. *K. Shimura, A. Kikuchi, K. Ohtomo, Y. Katagata, and A. Hyodo* 693

Affinity Chromatographic Purification of Human Lysozyme, with Special Reference to Human Leukemia Lysozyme. *T. Yoshimoto, M. Tobiishi, and D. Tsuru* 703

Phospholipid Metabolism in Ehrlich Ascites Tumor Cells. II. Turnover Rate of Ether Phospholipids. *K. Waku, Y. Nakazawa, and W. Mori* 711

Effect of Guanosine 3′:5′-Monophosphate on Glucose Oxidation and Epinephrine-stimulated Lipolysis in Isolated Rat Epididymal Fat Cells. *M. Takeda and Y. Nakaya* 717

Solubilization of Diglyceride Acyltransferase from the Membrane of *Mycobacterium smegmatis*. *T. Akao and T. Kusaka* 723

Effect of Cholesterol Sulfate and Sodium Dodecyl Sulfate on Lecithin-cholesterol Acyltransferase in Human Plasma. *M. Nakagawa and S. Kojima* 729

A Cytoplasmic Inhibitor of DNA Polymerase from the Plasmodia of *Physarum polycephalum*. *K. Murakami-Murofushi, H. Nagano, and Y. Mano* 735

RNA Polymerase in Vegetative Cells of *Bacillus subtilis*. I. Purification and Properties of RNA Polymerase L1 and L2. *J.-E. Ikeda and H. Saito* 743

RNA Polymerase in Vegetative Cells of *Bacillus subtilis*. II. New Polypeptide Factors, FI and FII, Stimulating *In Vitro* RNA Synthesis Directed by Phage M2 DNA. *J.-E. Ikeda and H. Saito* 755

Ribonucleases from Porcine Brain. Partial Purification and Properties. *K. Nishikawa, K. Takahashi, and T. Ando* 767

O-Acetylserine and O-Acetylhomoserine Sulfhydrylase of Yeast. Further Purification and Characterization as a Pyridoxal Enzyme. *S. Yamagata and K. Takeshima* 777

O-Acetylserine and O-Acetylhomoserine Sulfhydrylase of Yeast. Subunit Structure. *S. Yamagata* 787

The Aconitase of Yeast. IV. Studies on Iron and Sulfur in Yeast Aconitase. *T. Suzuki, S. Akiyama, S. Fujimoto, M. Ishikawa, Y. Nakao, and H. Fukuda* 799

The Aconitase of Yeast. V. The Reconstitution of Yeast Aconitase. *T. Suzuki, S. Akiyama, S. Fujimoto, M. Ishikawa, Y. Nakao, and H. Fukuda* 805

Light-induced Oxidation-Reduction Reactions of Cytochromes in the Green Sulfur Photosynthetic Bacterium *Prosthecochloris aestuarii*. *Y. Shioi, K. Takamiya, and M. Nishimura* 811

Escherichia coli Membrane D-Lactate Dehydrogenase. Isolation of the Enzyme in Aggregated Form and Its Activation by Triton X-100 and Phospholipids. *Y. Tanaka, Y. Anraku, and M. Futai* 821

Characterization of ATPases of Plain Synaptic Vesicle and Coated Vesicle Fractions Isolated from Rat Brains. *R. Tanaka, M. Takeda, and M. Jaimovich* 831

Flavodoxin: An Allosteric Inhibitor of AMP Nucleosidase from *Azotobacter vinelandii*. *M. Yoshino, K. Murakami, and K. Tsushima* 839

High Affinity Binders for Cyclic Adenosine 3′,5′-Monophosphate on Plasma Membranes Isolated from Rat Liver and Ascites Hepatomas. *Z. Nambu and H. Terayama* 845

PAGE

Separation of Myosin Subfragment 1 into Two Fractions, One Having the Burst Site and the Other Having the Non-burst Site. *S. Taniguchi and K. Tawada* 853

Temperature-dependence of Tension Development by Glycerinated Muscle Fibers of Rabbit Psoas in Mn(II)-ATP and Mg-ATP Solutions. *A. Yoshida and K. Tawada* 861

Metabolism of *threo*-β-Methylmalate by a Soil Bacterium. *S. Suzuki, Y. Takeuchi, K. Sasaki, and H. Katsuki* 867

Changes in Mitochondrial Phosphorylative Activity and Adenylate Energy Charge of Regenerating Rabbit Liver. *Y. Kamiyama, K. Ozawa, and I. Honjo* 875

Zinc Binding by Glycosaminoglycans. *C.S. Sato and F. Gyorkey* 883

PRELIMINARY COMMUNICATIONS

Release of Fatty Acids from Phosphatidylcholine by Lecithin-Cholesterol Acyltransferase. *U. Piran and T. Nishida* 887

A Potent Polyamine Analog, Spermindiol. *H. Yanagawa, Y. Ogawa, and F. Egami* 891

Enzyme-linked Sandwich Immunoassay of Ornithine δ-Aminotransferase from Rat Liver Using Antibody-coupled Glass Rods as Solid Phase. *Y. Hamaguchi, K. Kato, H. Fukui, I. Shirakawa, E. Ishikawa, K. Kobayashi, and N. Katunuma* 895

Regulatory Protein of Vascular Smooth Muscle. *N. Ito, T. Takagi, and K. Hotta* 899

No. 5, November, 1976

The Isolation and Characterization of Glycopeptides and Mucopolysaccharides from Plasma Membranes of an Ascites Hepatoma, AH 130 FN. *S. Mutoh, I. Funakoshi, and I. Yamashina* 903

Enzymatic Studies on a Cellulase System of *Trichoderma viride*. IV. Purification and Properties of a Less-Random Type Cellulase. *G. Okada* 913

Metabolism of Triacylglycerol in *Mycobacterium smegmatis*. *H. Nakagawa, Y. Kashiwabara, and G. Matsuki* 923

Further Studies on the Mechanism of Adrenaline-induced Lipolysis in Lipid Micelles. *Y. Saito, N. Matsuoka, H. Okuda, and S. Fujii* 929

Determination of the Anomeric Configurations of *Corbicula* Ceramide Di- and Trihexoside by Chromium Trioxide Oxidation. *O. Itasaka, M. Sugita, H. Yoshizaki, and T. Hori* 935

The Primary Structure of Non-initiator Methionine Transfer Ribonucleic Acid from Bakers' Yeast. I. Purification and Complete Digestion with Ribonuclease T_1 and Pancreatic Ribonuclease A. *O. Koiwai and M. Miyazaki* 937

The Primary Structure of Non-initiator Methionine Transfer Ribonucleic Acid from Bakers' Yeast. II. Partial Digestion with Ribonuclease T_1 and Derivation of the Complete Sequence. *O. Koiwai and M. Miyazaki* 951

A Method for Analyzing Enzyme Kinetics with Substrate Activation and Inhibition and Its Application to the α-Chymotrypsin-catalyzed Hydrolysis of Phenyl Acetates. *N. Shimamoto* 961

Hydrogen-Deuterium Exchange in the Histidine Residues of Bovine α-Lactalbumin. *H. Takesada, M. Nakanishi, M. Tsuboi, and K. Ajisaka* 969

The Structure and Function of Acid Proteases. VI. Effects of Acid Protease-Specific Inhibitors on the Acid Proteases from *Aspergillus niger* var. *macrosporus*. *W.-J. Chang, S. Horiuchi, K. Takahashi, M. Yamasaki, and Y. Yamada* 975

Pepsinogen C and Pepsin C from Gastric Mucosa of Japanese Monkey. Purification and Characterization. *T. Kageyama and K. Takahashi* 983

PAGE

Amino Acid Sequence of the Major Component of *Nostoc muscorum* Ferredoxin.
T. Hase, K. Wada, M. Ohmiya, and H. Matsubara 993

Isolation and Characterization of Nerve Growth Factor from the Venom of *Naja naja atra.*
S. Furukawa and K. Hayashi 1001

A Clottable Protein (Coagulogen) from Amoebocyte Lysate of Japanese Horseshoe Crab (*Tachypleus tridentatus*). Its Isolation and Biochemical Properties.
S. Nakamura, S. Iwanaga, T. Harada, and M. Niwa 1011

The Mechanism of Reassembly of Imunoglobulin G. *T. Azuma and K. Hamaguchi* 1023

The Biosynthesis of Transfer RNA in Insects. II. Isolation of Transfer RNA Precursors from the Posterior Silk Gland of *Bombyx mori.* *K. Tsutsumi, R. Majima, and K. Shimura* 1039

Conformational Transitions of Polypeptide Chain Elongation Factor Tu. II. Further Studies by Electron Spin Resonance. *K. Arai, T. Maeda, M. Kawakita, S. Ohnishi, and Y. Kaziro* 1047

Conformational Transition of Polypeptide Chain Elongation Factor G as Determined by Electron Spin Resonance. *N. Arai, K. Arai, T. Maeda, S. Ohnishi, and Y. Kaziro* 1057

Molecular Weight Estimation of Protoheme Ferro-lyase by Radiation Inactivation.
S. Tanaka, S. Nagahama, M. Takeshita, and Y. Yoneyama 1067

Interaction between D-Amino Acid Oxidase and Small Molecules.
K. Horiike, K. Shiga, A. Isomoto, and T. Yamano 1073

Studies on the Turnover Rates of Ornithine Aminotransferase in Morris Hepatoma 44 and Host Liver. *K. Kobayashi, H.P. Morris, and N. Katunuma* 1085

δ-Aminolevulinate Synthetases in the Liver Cytosol Fraction and Mitochondria of Mice Treated with Allylisopropylacetamide and 3,5-Dicarbethoxy-1,4-dihydrocollidine.
J. Igarashi, N. Hayashi, and G. Kikuchi 1091

A Study of the Interaction between D-Amino Acid Oxidase and Quasi-substrates.
K. Shiga, K. Horiike, A. Isomoto, and T. Yamano 1101

2,4-Dinitrophenol as a Specific Inhibitor of the Breakdown of the Actomyosin-Phosphate-ADP Complex. *Y. Yamada, A. Inoue, and S. Watanabe* 1109

The Role of Tryptophanyl Residues in Heavy Meromyosin as Studied by Chemical Modification with 2-Hydroxy-5-nitrobenzyl Bromide. *H. Yoshino* 1117

Physiological Significance of Ca Uptake by Mitochondria in the Heart in Comparison with that by Cardiac Sarcoplasmic Reticulum. *T. Kitazawa* 1129

Ca-Releasing Action of β,γ-Methylene Adenosine Triphosphate on Fragmented Sarcoplasmic Reticulum. *Y. Ogawa and S. Ebashi* 1149

Control of Ketogenesis from Amino Acids. IV. Tissue Specificity in Oxidation of Leucine, Tyrosine, and Lysine. *C. Noda and A. Ichihara* 1159

A Correlation between Changes in γ-Aminobutyric Acid Metabolism and Seizures Induced by Antivitamin B_6. *M. Abe and M. Matsuda* 1165

PRELIMINARY COMMUNICATIONS

Specific Modification of Arginine Residues in Proteins with Ninhydrin. *K. Takahashi* 1173

Magnesium Ion-induced Changes in the Binding Mode of Adenylates to Chloroplast Coupling Factor 1. *M. Higashida and Y. Mukohata* 1177

Separation of Molecular Species of Glucosylceramide by High Performance Liquid Chromatography of Their Benzoyl Derivatives. *A. Suzuki, S. Handa, and T. Yamakawa* 1181

No. 6, December, 1976

PAGE

Isolation of the Major Glucoprotein from Plasma Membranes of an Ascites Hepatoma AH 66. *I. Funakoshi and I. Yamashina* 1185

Characterization of β-Galactosidase from a Special Strain of *Aspergillus oryzae*. *M. Akasaki, M. Suzuki, I. Funakoshi, and I. Yamashina* 1195

Action of Chondroitinases. I. The Mode of Action of Two Chondroitinase-AC Preparations of Different Origin. *K. Hiyama and S. Okada* 1201

Action of Chondroitinases. II. Numerical Calculation of the Degree of Multiple Attack. *K. Hiyama* 1209

Sulfate Incorporation from Ascorbate 2-Sulfate into Chondroitin Sulfate by Embryonic Chick Cartilage Epiphyses. *H. Hatanaka and F. Egami* 1215

Studies on the Hydrazinolysis of Glycoproteins. Core Structures of Oligosaccharides Obtained from Porcine Thyroglobulin and Pineapple Stem Bromelain. *M. Fukuda, T. Kondo, and T. Osawa* 1223

Effect of Phospholipase C Hydrolysis of Membrane Phospholipids on Acyltransferase Systems in Rat Liver Microsomes. *S. Sonoki and H. Ikezawa* 1233

Chemical Characterization of the Serum Very Low Density and High Density Lipoproteins from Bullfrog, *Rana catesbeiana*. *N. Suzuki, K. Deguchi, N. Ueta, H. Nagano, and R. Shukuya* 1241

Nature of *Escherichia coli* Mutants Deficient in Detergent-Resistant and/or Detergent-Sensitive Phospholipase A. *O. Doi and S. Nojima* 1247

The Structure and Function of Ribonuclease T_1. XX. Specific Inactivation of Ribonuclease T_1 by Reaction with Tosylglycolate. *H. Oshima and K. Takahashi* 1259

The Structure and Function of Ribonuclease T_1. XXI. Modification of Histidine Residues in Ribonuclease T_1 with Iodoacetamide. *K. Takahashi* 1267

Dog Renal Kallikrein: Purification and Some Properties. *C. Moriwaki, K. Miyazaki, Y. Matsuda, H. Moriya, Y. Fujimoto, and H. Ueki* 1277

Preferential Acid-catalyzed Hydrolysis of the Formamide Linkage of N′-Formylkynurenine in Frozen Solution. *N. Yamasaki, T. Tsujita, F. Sakiyama, and N. Masuda* 1287

The Reactive Site of Eggplant Trypsin Inhibitor. *M. Yamada, M. Tashiro, H. Yamaguchi, H. Yamada, F. Ibuki, and M. Kanamori* 1293

Bovine Plasma HMW and LMW Kininogens. Structural Differences between Heavy and Light Chains Derived from the Kinin-free Proteins. *H. Kato, Y.-N. Han, S. Iwanaga, T. Suzuki, and M. Komiya* 1299

A Study of the Native-Denatured (N⇌D) Transition in Lysozyme. II. Kinetic Analysis of Protease Digestion. *T. Imoto, K. Fukuda, and K. Yagishita* 1313

A Study of the Native-Denatured (N⇌D) Transition in Lysozyme. III. Effect of Alteration of Net Charge by Acetylation. *T. Imoto, S. Moriyama, and K. Yagishita* 1319

Exchange Reactions Catalyzed by Methioninase from *Pseudomonas putida*. Isolation and Characterization of the Exchange Products. *S. Ito, T. Nakamura, and Y. Eguchi* 1327

A Method for the Deductive and Unique Determination of the Values of Three Parameters Involved in Fractional Functions Applicable to Relaxation Kinetics. *M. Sakoda and K. Hiromi* 1335

Superoxide Dismutase from *Mycobacterium tuberculosis*. *E. Kusunose, K. Ichihara, Y. Noda, and M. Kusunose* 1343

Structure and Function of the Two Heads of the Myosin Molecule. I. Binding of Adenosine Diphosphate to Myofibrils during the Adenosinetriphosphatase Reaction. *T. Arata and Y. Tonomura* 1353

Structure and Function of the Two Heads of the Myosin Molecule. II. Separation of the Two Fractions of Subfragment-1 of Myosin by Affinity Column Chromatography on Immobilized F-Actin: Direct Evidence for Acceleration by F-Actin of the Decomposition of the Reactive Enzyme-Phosphate-ADP Complex Formed on Head B of Myosin. *A. Inoue and Y. Tonomura* 1359

PAGE

Structure and Function of the Two Heads of the Myosin Molecule. III. Cooperativity of the Two Heads of the Myosin Molecule, Shown by the Effect of Modification of Head A with *p*-Chloromercuribenzoate on the Interaction of Head B with F-Actin. *K. Shibata-Sekiya and Y. Tonomura* 1371

Structure and Function of the Two Heads of the Myosin Molecule. IV. Physiological Functions of Various Reaction Intermediates in Myosin Adenosinetriphosphatase, Studied by the Interaction between Actomyosin and 8-Bromoadenosine Triphosphate. *H. Takenaka, M. Ikehara, and Y. Tonomura* 1381

Determination of the Intravesicular pH of Fragmented Sarcoplasmic Reticulum with 5,5-Dimethyl-2,4-oxazolidinedione. *K. Nomura and Y. Nakamaru* 1393

Interactions of Outer Membrane Proteins O-8 and O-9 with Peptidoglycan Sacculus of *Escherichia coli* K-12. *Y. Hasegawa, H. Yamada, and S. Mizushima* 1401

Effects of Heating in Dodecyl Sulfate Solution on the Conformation and Electrophoretic Mobility of Isolated Major Outer Membrane Proteins from *Escherichia coli* K-12. *K. Nakamura and S. Mizushima* 1411

Isolation of Two Forms of Activated C1s, a Subcomponent of the First Component of Rabbit Complement. *E. Ishizaki, Y. Yoshioka, Y. Mori, and J. Koyama* 1423

PRELIMINARY COMMUNICATIONS

Incorporation of [^{14}C]Glucose from UDP[^{14}C]Glucose into a Phosphoglycolipid by Cell-free Particulate Systems of a Moderately Halophilic Gram-negative Bacterium, *Pseudomonas halosaccharolytica* ATCC 29423. *Y. Ohno, I. Yano, and M. Masui* 1429

Polyamine-dependent Deoxyribonuclease Activity from Rat-Liver Nuclei. *T. Nakano and M. Tsuboi* 1435

The Effect of Inositol Hexaphosphate on the Absorption Spectra of α and β Chains in Nitrosyl Hemoglobin. *K. Nishikura and Y. Sugita* 1439

A Novel Neutral Protease(s) from Monkey Liver. *K. Sogawa and K. Takahashi* 1443

An Anomaly in the Resonance Raman Spectra of Cytochrome P-450$_{cam}$ in the Ferrous High-spin State. *Y. Ozaki, T. Kitagawa, Y. Kyogoku, H. Shimada, T. Iizuka, and Y. Ishimura* 1447

Amino Acid Composition of Peptidoglycan in *Caulobacter crescentus*. *K. Fujiki, A. Fukuda, and Y. Okada* 1453

The Site-specific Deoxyribonuclease from *Bacillus pumilus* (Endonuclease R.*Bpu* 1387). *S. Ikawa, T. Shibata, and T. Ando* 1457